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## PARABOLIC ELEMENTS OF COMET SWIFT (NOV. 16).

BY A. O. LEUSCHNER.

From the three successive observations at Lick Observatory, November 20, 21, 22, which were kindly communicated to me by Professor E. E. BARNARD, I have deduced the following parabolic elements by OPPOLZER's method:

$$T = 1889, \text{ Dec. 11, 8493 G. M. T.}$$

$$\Omega = 306^\circ 25'$$

$$\omega = 116^\circ 24' \quad O - C \quad \begin{cases} d\lambda, \cos \beta = +1'.2 \\ d\beta = \pm 0.0 \end{cases}$$

$$i = 6^\circ 47'$$

$$\log q = 0.0633$$

The small geocentric arc and the error of 1'.2 remaining in  $\lambda$  render these elements extremely uncertain. The comet is very likely periodic.

BERKELEY, CAL., November 27, 1889.

MINUTES OF THE MEETING OF THE BOARD OF DIRECTORS, HELD  
NOVEMBER 30, 1889, AT 408 CALIFORNIA STREET,  
SAN FRANCISCO.

A quorum was present.

The minutes of the last meeting were read and approved.

Bills presented by the Secretary and Treasurer were approved.

Miss C. W. BRUCE, of New York City, was duly elected a life member, subject to the action of the Society.

Adjourned.

MINUTES OF THE MEETING OF THE ASTRONOMICAL SOCIETY OF  
THE PACIFIC, HELD NOVEMBER 30, 1889 (BY INVITATION),  
IN THE ROOMS OF THE CALIFORNIA ACADEMY  
OF SCIENCES, SAN FRANCISCO.

[PREPARED BY THE SECRETARIES FOR PUBLICATION.]

Owing to the absence of the President, Vice-President PIERSON took the chair.

The thanks of the Society were tendered to the California Academy of Sciences for the use of their rooms.

The minutes of the last meeting were read and approved.

A list of gifts to the Society was read, and thanks were returned to the donors.

The following members were then elected; the names of life-members, duly elected by the Board of Directors, being marked with a star (\*):

CHARLES S. AIKEN, - - - -	Berkeley, Cal.
J. H. C. BONTÉ, D. D. - - - -	Berkeley, Cal.
Miss C. W. BRUCE,* - - - -	39 East Twenty-third Street, N. Y. City.
N. E. BECKWITH, - - - -	Los Gatos, Cal.
J. A. BRASHEAR, - - - -	Allegheny City, Penn.
CHARLES M. BAKEWELL, - - - -	Berkeley, Cal.
Miss AGNES M. CLERKE, - - - -	68 Redcliffe Square, London, England.
Hon. HORACE DAVIS, - - - -	1011 Bush Street, San Francisco, Cal.
A. B. DEPUY, - - - -	216 North Sixth Street, Camden, N. J.
WARREN B. EWER, - - - -	220 Market Street, San Francisco, Cal.
Mrs. MARTHA MCC. EWER, - - - -	220 Market Street, San Francisco, Cal.
JOHN GAMBLE, - - - -	Laurel Hall, San Mateo, Cal.
HENRY HARRISON, - - - -	South Bergen, N. J.
CHARLES F. HART, - - - -	N. Temescal, Alameda County, Cal.
O. C. HASTINGS, - - - -	Box 166, Victoria, B. C.
JOHN J. HERR, - - - -	438 California Street, San Francisco, Cal.
WHITNEY HERR, - - - -	438 California Street, San Francisco, Cal.
FRANK JAYNES, - - - -	W. U. Telegraph Co., San Francisco, Cal.
Rev. GEORGE W. JAMES, F. R. A. S.,	Oleander, Fresno County, Cal.
AUGUSTUS F. KNUDSEN, - - - -	Box 2139, Boston, Mass.
Professor JOSEPH LE CONTE, - - - -	Berkeley, Cal.
Miss MARGARET LEPPER, - - - -	Box 490, Benecia, Cal.
WARREN OLNEY, - - - -	481 Prospect Avenue, Oakland, Cal.
JAMES N. PEMBERTON, - - - -	Downey, Cal.
C. D. PERRINE, - - - -	211 Clay Street, San Francisco, Cal.
J. E. RICHARDS, - - - -	Los Gatos, Cal.
F. B. RODOLPH, - - - -	969 Washington Street, Oakland, Cal.
WM. G. RAYMOND, - - - -	Berkeley, Cal.
Professor J. K. REES, - - - -	{ Observatory of Columbia College, New York City.
WM. F. SMITH, - - - -	2515 Broadway Street, San Francisco, Cal.
GARRETT P. SERVISS, - - - -	8 Middagh Street, Brooklyn, N. Y.
J. A. SLADKY, - - - -	Berkeley, Cal.
IRVING M. SCOTT, - - - -	507 Harrison Street, San Francisco, Cal.
JOHN H. YOELL, - - - -	San José, Cal.

The Secretary's books show that the Society now consists of 156 active and 22 life members, or 178 in all. Mr. PIERSON announced to the Society that Hon. ALEXANDER MONTGOMERY, a member of the Society, offers the sum of \$2500 to the Astronomical Society of the Pacific, for the purpose of establishing a gold medal to be awarded annually to the writer of the best paper on the subject of Astronomy presented to the Society during the year; the gift to be without conditions, and the Society to have the privilege of using this gift for other purposes. The Society accepted this generous gift by a rising vote.

A paper "On the Determination of the Relation between the Exposure Time and the consequent Blackening of a Photographic Film" was then read by Mr. LEUSCHNER. This was followed by a paper "On Photographs of the Milky Way," by Mr. BARNARD. The latter paper was illustrated by lantern slides prepared by Mr. BARNARD from some of his own negatives. The other papers announced for the evening were not read.

The Society then adjourned to meet at its rooms, 408 California Street, on January 25, 1890.

**OFFICERS OF THE SOCIETY.**

EDWARD S. HOLDEN (Lick Observatory),	- - - -	<i>President</i>
WM. M. PIERSON (76 Nevada Block, S. F.),	- - - -	} <i>Vice-Presidents</i>
W. H. LOWDEN (213 Sansome Street, S. F.),	- - - -	
FRANK SOULÉ (Students' Observatory, Berkeley),	- - - -	
CHAS. BURCKHALTER (Chabot Observatory, Oakland),	- - - -	} <i>Secretaries</i>
J. M. SCHAEBERLE (Lick Observatory),	- - - -	
E. J. MOLERA (850 Van Ness Avenue, S. F.),	- - - -	<i>Treasurer</i>

*Board of Directors*—Messrs. ALVORD, BOERICKE, BURCKHALTER, GIBBS, GRANT, HOLDEN, LOWDEN, MOLERA, PIERSON, SCHAEBERLE, SOULÉ.

*Finance Committee*—Messrs. GIBBS, PIERSON, MOLERA.

*Committee on Publication*—Messrs. DEWEY, TREAT, ZIEL.

*Committee on the Comet Medal*—Messrs. HOLDEN (*ex-officio*), SCHAEBERLE, BURCKHALTER.

**NOTICE.**

Members are requested to preserve the copies of the Publications of the Society as sent to them. Once each year a title page and index of the preceding numbers will also be sent to the members, who can then bind the numbers together into a volume.

It is intended that each member of the Society shall receive a copy of each one of the Publications for the year in which he was elected to membership and for all subsequent years. If there have been (unfortunately) any omissions in this matter, it is requested that the Secretaries be at once notified, in order that the missing numbers may be supplied.

Complete volumes for past years (preceding the calendar year in which any member was elected) will also be supplied to members, so far as the stock in hand is sufficient, on the payment of one dollar to either of the Secretaries.

The titles of papers for reading should be communicated to either of the Secretaries as early as possible.

Those members who propose to attend any or all of the meetings at Mount Hamilton during the summer should communicate with "The Secretary Astronomical Society of the Pacific," at the rooms of the Society, 408 California Street, San Francisco, in order that arrangements may be made for transportation, lodging, etc.

